



UNITED STATES NAVY

MEDICAL NEWS LETTER

Rear Admiral Bartholomew W. Hogan MC USN - Surgeon General
 Captain Leslie B. Marshall MC USN (RET) - Editor

Vol. 28

Friday, 2 November 1956

No. 9

TABLE OF CONTENTS

Historical Fund of the Navy Medical Department	2
SPECIAL NOTICE	3
Silage Gas Poisoning	5
Hypertensive Pulmonary Vascular Disease	7
Management of Rheumatoid Arthritis	8
Serum Hepatitis Following Dental Procedures	11
Betatron Therapy in Vesical Carcinoma	13
Spontaneous Regression of Cancer	14
Inguinal Hernia in Infancy and Early Childhood	16
First Year Residencies	18
Film Reference Guide for Medical and Allied Services	18
Safety Precautions in Use of the Picker Type X-Ray Machine	19
From the Note Book	20
Recent Research Projects	22
Scientific Meeting on Aviation Pathology	23
On-Site Surveys of Functional Areas (BuMed Notice 5042)	23
Hospital Corps Training in Operating Room Technic (BuMed Notice 1510)	23

DENTAL SECTION

RADM Malone Visits West Coast .. 24	Postgraduate Instruction	24
Training Aid Pamphlet	24	Nursing Educational Program .. 25

MEDICAL RESERVE SECTION

Hospital Corps Program	26	Naval Reserve Association	27
Naval Reservist's Creed		28	

SUBMARINE MEDICINE SECTION

Dark Adaptation for Divers	29	Quotable Excerpts	30
----------------------------------	----	-------------------------	----

PREVENTIVE MEDICINE SECTION

Poliomyelitis Vaccine for Adults..	31	Antibiotics and Virus Diseases .	35
Influenza - Winter 1955-1956	31	Membrane Filter	36
Medical Examinations in Industry .	34	Fatigue	40

HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N.M.D. Historical Fund
Bureau of Medicine and Surgery (Code 23)
Department of the Navy
Washington 25, D. C.

Committee

W. DANA, Rear Admiral (MC) USN, Chairman
R. W. MALONE, Rear Admiral (DC) USN
W. C. CALKINS, Captain (MSC) USN
W. L. JACKSON, Captain (NC) USN
T. J. HICKEY, Secretary-Treasurer

SPECIAL NOTICE

TO ALL ADDRESSEES (EXCEPT U.S. Navy and Naval Reserve personnel on ACTIVE DUTY and U.S. Navy Ships and Stations).

Existing regulations require that all Bureau and office mailing lists be checked and circularized at least once each year in order to eliminate erroneous and duplicate mailings.

It is, therefore, requested that EACH RECIPIENT of the U.S. Navy Medical News Letter, (EXCEPT U.S. Navy and Naval Reserve personnel on ACTIVE DUTY, and U.S. Navy Ships and Stations) fill in and forward immediately the form appearing below if continuation on the distribution list is desired.

Failure to reply to the address given on the form by 15 December 1956 will automatically cause your name to be removed from the files. Only one (1) answer is necessary. Please state the branch of the Armed Forces (if any) and whether Regular, Reserve, or Retired. Also, please write legibly. If names and addresses cannot be deciphered, it is impossible to compare them with the addressograph plates.

Editor

(Detach here)

Chief, Bureau of Medicine and Surgery
Navy Department, Potomac Annex
Washington 25, D. C.

_____ (date)

I wish to continue to receive the U.S. Navy Medical News Letter.

Name _____

or

Activity _____

Ret _____

or (Print or type, last name first) (rank, service, corps)

Civilian Status _____

Address _____

(number)

(street)

City _____

Zone _____

State _____

(Signature)

(Please print clearly. Only one answer is necessary.)

Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

* * * * *

Silage Gas Poisoning

Two cases of acute respiratory disease due to inhalation of silage gas were encountered in August 1954. One was fatal. A thorough investigation of these two cases and of the silage gas that caused the illness indicates that the disease was caused by the oxides of nitrogen.

A careful review of the literature indicates that, although chemical pneumonia and fatalities due to fumes of the oxides of nitrogen have been described many times in industry, they apparently have not been reported in cases of silage gas poisoning. The two cases, therefore, are believed to be the first cases reported in the literature of poisoning from silage gas in which it was definitely proved that the noxious agents were the oxides of nitrogen.

Special studies on these two cases were performed by officials at the University of Missouri. The results of these studies were made available to the author by J. H. Longwell of the Division of Agricultural Sciences, College of Agriculture, University of Missouri.

Gas was collected from the silo in which the two individuals had been poisoned. Chemical analysis of the actual gas, performed at the University of Missouri, indicated that this gas contained the oxides of nitrogen. Also, some of the corn from the same silo was brought to the laboratory and placed in a miniature silo for fermentation. The gas produced in this experimental silo was collected and chemically analyzed. This also showed large amounts of the mixed oxides of nitrogen.

The gas which came from the corn ensilage was proved to be toxic. First of all, it was noticed that around the silo in which the individuals had been stricken, a great number and variety of insects had been killed. In addition, the vegetation was killed below the silo drain where the heavy gas would flow.

Albino rats were placed in a miniature silo in the University laboratory and observed under conditions similar to the silage fermentation on the farm where the accident occurred. All the rats allowed to stay in the miniature silo died.

Pfander and Muhrer stated that several cases of forage poisoning in cattle were reported following the feeding of forage grown in 1953 when there was a severe drought in Missouri. The incidence increased in 1954 until it reached a near epidemic proportion in central Missouri. Dozens of herds were affected and hundreds of cattle were killed. The University of Missouri performed many tests of the forages consumed by these animals and in most cases the feed contained excessive amounts of nitrates. Ensiled corn plants, when high in nitrate, underwent abnormal reactions, and a poisonous yellow gas was often formed. The analysis of this gas showed that it was a mixture of oxides of nitrogen and was highly toxic to animal life.

From this review, it is apparent that silage gas poisoning due to the oxides of nitrogen is a little known disease and one that has not been adequately reported in the medical literature.

Under ordinary circumstances, when there is sufficient moisture for the production of normal corn plants, high concentration of nitrates does not occur in the corn stalks, and the abnormal chemical reactions that produce oxides of nitrogen do not take place. Therefore, in normally wet years, poisoning by oxides of nitrogen will not be suspected, but rather, if any silage gas poisoning cases do occur, their cause can usually be ascribed to carbon dioxide or to asphyxia from oxygen depletion.

In years of drought, however, in areas where irrigation is not common practice, it may be expected that high concentrations of poisonous nitrates will occur in corn ensilage, which will be poisonous when fed as fodder to cattle and other beasts and will produce noxious gases in unventilated silos.

The disease produced by inhaling the gases from high nitrate ensilage is in every way identical to the disease described in industrial toxicology as that produced by the fumes of nitric acid and from other sources of nitrates, such as gunpowder and other explosives. This disease is essentially an acute chemical pneumonitis which is generalized over the entire pulmonary structure. It is caused by the toxic action of nitrogen dioxide in the respiratory tree, producing a reaction which essentially is due to nitric and nitrous acids. This produces an intense inflammatory response after a latent interval of from one to many hours which then progresses to either minor or severe forms of chemical bronchopneumonia. The longer the exposure to the noxious gases and the more intense the fumes, the more severe the pneumonia. If the exposure has been severe, there is little that present therapy can offer in preventing fatalities.

The treatment of this disease is nonspecific and primarily supportive until the organism can recover pulmonary function by natural means. Oxygen should be given. Probably, oxygen under pressure during the phase of pulmonary edema would be of benefit. Antibiotics must be given to prevent

secondary bacterial pneumonitis. The methemoglobinemia caused by nitrites apparently has not been a serious problem in the reported cases. However, studies should be done on this aspect of the problem and if methemoglobinemia is found to be a significant cause of the disability, treatment should be directed toward alleviating this aspect of the disease. Bronchodilators are indicated, but are probably of minimal value. Should evidence of cardiac decompensation occur, digitalization should be instituted. (Grayson, R. R., Silage Gas Poisoning - Nitrogen Dioxide Pneumonia, A New Disease in Agricultural Workers: Ann. Int. Med., 45: 393-405, September 1956)

* * * * *

Hypertensive Pulmonary Vascular Disease

The purpose of this communication is to describe the clinical and histologic features characteristic of severe pulmonary hypertension and to define hypertensive pulmonary vascular disease as a distinct clinicopathologic entity which may be regarded as analogous to malignant hypertension in the systemic circulation.

Patients with pulmonary artery blood pressures chronically elevated to levels approaching or exceeding systemic pressures, form a distinct clinicopathologic entity for which the term hypertensive pulmonary vascular disease is proposed.

The symptoms and signs of pulmonary hypertension dominate the clinical picture in this syndrome. Symptoms of severe pulmonary hypertension are breathlessness on exertion, frequent coughs and colds, chest pain of anginal type, blueness of the lips and nails, and abdominal distention and ankle swelling due to congestive cardiac failure. Hemoptysis, hoarseness, jaundice, syncopal attacks, and palpitation occur less commonly.

Signs associated with pulmonary hypertension are giant "a" waves in the jugular venous pulse, a parasternal heave, a systolic lift over the right ventricular outflow tract, a palpable second sound in the pulmonary area which is loud and closely split on auscultation, a Graham Steell murmur, and a pulmonary systolic click. In addition, central and peripheral cyanosis, clubbing of the fingers, jaundice, the signs of congestive cardiac failure, and cardiac murmurs frequently occur.

The electrocardiogram usually shows clockwise rotation of the heart and the ventricular pattern of right ventricular hypertrophy. On radiologic examination, there is evidence of right ventricular hypertrophy, increased prominence of the pulmonary artery and its main branches, and decreased peripheral pulmonary vascular markings.

Angiocardiography demonstrates a dilated pulmonary artery and a coppicing effect in the small branches of the pulmonary vascular tree. The flow of dye through these dilated vessels is abnormally slow. It allows abnormal flows to be visualized and previously unrecognized cardiac defects to be demonstrated.

Cardiac catheterization shows pulmonary artery blood pressures approaching or exceeding systemic pressures, and occasionally reveals intrinsic cardiac defects.

The features of this syndrome are illustrated by descriptions of patients with idiopathic pulmonary hypertension, atrial septal defect, ventricular septal defect, patent ductus arteriosus, Eisenmenger's complex, and mitral stenosis and severe pulmonary hypertension, because these are lesions commonly found underlying hypertensive pulmonary vascular disease.

The definitive pathologic changes in the pulmonary vasculature are a distinct muscular media with two elastic membranes in the pulmonary arteriole and medial hypertrophy in the muscular pulmonary artery. Frequently, in these vessels, there is abnormal proliferation of intimal fibrous tissue with partial or complete occlusion of the lumen, adventitial fibrosis, and medial necrosis. Occasionally, there is aneurysmal dilatation of thin-walled branches of the muscular pulmonary arteries. (Heath, D., Whitaker, W., Hypertensive Pulmonary Vascular Disease: *Circulation*, XIV: 323-340, September 1956)

* * * * *

Management of Rheumatoid Arthritis

As yet, there is no remedy which can be counted upon to arrest rheumatoid arthritis. None has induced remissions as consistently as has either pregnancy or jaundice. Even though Factor X, credited by Hench with reversibility of rheumatoid arthritis, remains unknown, the disease also commonly abates under other less distinctive circumstances. For no obvious reason, interludes free from arthritis happen and may last for years and even decades. Such considerations do not furnish a guide to individual prognosis in rheumatoid arthritis, but they do indicate a natural trend not invariably grave.

The rationale for comprehensive management of rheumatoid arthritis issues from the failure of any single therapeutic agent and from the likely assumption that supportive, preventive, and corrective measures beneficially influence the virulence of, and the impairment, due to the disease.

The typical hazard of rheumatoid disease derives from the chronic presence of inflammation in connective tissue. Occasionally, the pathological process remains localized to some joints or even to one joint, or to a part of an anatomic system, like lymph nodes, blood vessels, or pleura. Limited and shifting foci may recur intermittently for years, whereas in other cases, the disease is disseminated at once and for long periods throughout the connective tissue of several organs and systems. Impairment of specialized cells and reactive fibrosis, the results of chronic inflammation, therefore, become the dual risk to connective tissue proper and to structures which connective tissue helps to constitute. Hence, in all active cases, management has the

twofold aim of suppressing the primary inflammatory process and of counter-acting cicatrization or its effects. The therapeutic objectives in rheumatoid disease tend to be movable and multiple. They call for measures adapted to phase, intensity, extent, and sequellae of the ailment and to the variables of humans concerned with it.

One group of patients will have had—perhaps for months—suggestive but undiagnosable manifestations, such as fatigue, weight loss, vasomotor disturbances, paresthesias, or periarticular stiffness. When the diagnosis remains doubtful, it is best to proceed as though it were established and to treat the suspect by regulation of general hygiene and by reduction of occupational or other usual duties. It may be advisable to curtail all stressful activities by one-third to one-half, or to prescribe a full vacation for two to four weeks. Unless otherwise indicated, no medicine should be given except, possibly, a general vitamin preparation. The patient should be checked again within a month if no more definite symptoms appear sooner.

In other patients, the presence of synovitis, monarticular or multiple, particularly in symmetrical distribution, may permit a more definite diagnosis. Under these circumstances, the same regimen should be instituted and it will then also be necessary to prescribe salicylates on a regular schedule. These patients should have physical therapy to any joints which are even mildly involved on detailed examination. Elbows and shoulders are especially prone to early and silent loss of range. At this stage, one should prescribe a firm mattress, firm and low support for the neck, and proper positioning of individually affected joints at nighttime and during stated periods of rest. Inflamed articulations should be guarded from strain. A program of this kind may be continued with weekly checks for 3 to 6 months. During this time, also, any precipitating factors discovered in association with the onset or a recurrence should if possible be treated. If the disease comes under gradual control, the patient may attempt to resume his usual activities, but he should be protected from ordinary exertion for 3 months after he has become completely asymptomatic. If the condition deteriorates despite these measures, the practitioner should then suggest a regimen of greater restriction, preferably in a chronic disease hospital where patients may receive comprehensive supportive care and systematic physical therapy.

Assuming that the physician takes charge of a patient who has had persistently active rheumatoid arthritis for many months, equally careful evaluation should be made. He may choose to suggest a brief period of study in a general hospital. This will be particularly useful where one needs to determine accurately the degree of critical damage to joints so as to differentiate it from reversible limitations due to functional demands on impaired articulations. Patients at this stage may require joint aspiration, biopsies, or tests for precipitating factors, and they may be in need of orthopedic measures, such as splinting, traction, or manipulation. Many patients in this group will have been previously treated with drugs whose withdrawal can

be more readily effected under hospital conditions. A further advantage of 2 or 3 weeks' hospitalization at this stage is the schooling of the patient in the program to be initiated, especially of physical therapy. From various observations, including the clinical response, the practitioner will then be able to decide whether ambulatory regimen, home care, or sanatorium treatment are indicated. Tenaciously active and diffuse rheumatoid disease should be considered an indication for comprehensive institutional treatment. Where chronic disease hospitals are not available, one must attempt to substitute a facsimile elsewhere. No matter how troublesome these alternatives may be, the difficulties will eventually be compounded if one uses drug therapy instead of rational management.

For cases of protracted subacute rheumatoid arthritis with little or no constitutional disease, where the effect is limited to a few joints, the practitioner may continue with ambulatory treatment. In such cases, again, general activity should be reduced; salicylates, physical therapy, and dietary supplements comprising the chief elements of a supportive program should be prescribed and orthopedic supports should be provided for the affected joints. Such patients may be considered for intra-articular injection of corticosteroids every 2 to 4 weeks, as necessary. As an alternative adjunct to treatment of ambulatory patients with polyarticular involvement, the physician may choose chrysotherapy.

In still another group, the disease will be so far advanced that extensive destruction and/or ankyloses have occurred, and the patients will have sustained a marked functional deficit. In some, the rheumatoid process will be progressively active. Then the practitioner may prefer to consult with specialists in orthopedic surgery and rehabilitation. The management of such patients is usually too complex for any individual physician and requires multiple technical facilities for restorative procedures.

Other rheumatoid patients with chronic and advanced disease will have suffered impairment of only a few articulations, but severe enough to preclude normal living. These patients can frequently be restored to useful occupations, modified to their handicap. They also, as a rule, require comprehensive rehabilitative work for a period of 6 months to a year in a diversely equipped center. A third group of patients with multiple deformities no longer have active disease, but marked residual crippling present for a number of years may have forced them into acceptance of, and adjustment to, their limitations. One should not lightly undertake to disturb this equilibrium for the uncertain prospect of partial rehabilitation after months or years of painful costly effort. Prior to the institution of any extensive program of restoration, one should assay the crippled patient's physical emotional and intellectual resources. (Waine, H., Management of Rheumatoid Arthritis; Arch. Int. Med., 98: 332-334, September 1956)

* * * * *

Serum Hepatitis Following Dental Procedures

Homologous serum hepatitis occurring after administration of blood, plasma, and certain derivatives has been well documented and is considered a calculated risk. In recent years, another source of serum hepatitis has been recognized. It occurs after the skin has been punctured for therapeutic, diagnostic, or cosmetic reasons. Epidemiologic studies of needle or syringe hepatitis are infrequent except for sporadic reports indicating that transmission has occurred in diabetic clinics, syphilitic clinics, among narcotic addicts, and during tattooing, and other procedures involving skin penetration. Apparently, persons in the prodromal stage of serum hepatitis or those with a sub-clinical infection, can be the source of the infective material. Probably, however, the primary reservoirs of serum hepatitis are asymptomatic carriers of the virus. The supposition is that the virus is deposited in needles and syringes and that, because of improper sterilization, the virus remains viable and is transmitted to the next susceptible individual exposed to a skin puncture with the same instrument. Both Neefe and Murray have recently published excellent articles on the whole subject of viral hepatitis, and they should be consulted for details not within the scope of this article.

The authors call attention to an apparently not infrequent cause of hepatitis. In 1952, members of the house staff at the Rochester, (New York) General Hospital first became aware of the appearance of hepatitis following dental procedures. Because this form of hepatitis is preventable, the medical and dental professions should be alerted to the problem.

This study extends over a 2-year period, June 1953 - May 1955. All patients discharged from the medical service of the Rochester General Hospital during this period with the diagnosis of infectious hepatitis or serum hepatitis are included. Excluded were five cases of hepatitis due to infectious mononucleosis as proved by a rising heterophil titer. Fifty-seven cases of viral hepatitis remained for study. Of these, seven cases were serum hepatitis following blood or plasma transfusion. The remaining fifty cases ordinarily would have been considered cases of infectious hepatitis. Fifteen of these patients, however, gave a history of a dental injection during the preceding 1 to 6 months and are referred to as the dental serum hepatitis group.

These dental injections consisted of the injection of procaine during the process of extracting teeth in thirteen patients, and the filling of teeth in two patients. One patient in this group also received gas anesthesia and was not absolutely certain about the procaine injection. She did, however, have gum suturing performed at that time. In addition, two of the fifteen patients had received penicillin injections at the same time as the procaine injections.

The authors assume that infectious hepatitis and serum hepatitis are different entities due to different viruses; this is probable, but not definite. A lack of cross immunity, which points to a different antigenic structure,

has been demonstrated, but there is no test for differentiating the two types of viral hepatitis. Serum hepatitis is always diagnosed by history. However, the authors believe that one cannot be definite in any one specific case, because for instance, it is certainly possible for a post-transfusion patient to come down with infectious hepatitis. The evidence for making a diagnosis of serum hepatitis due to dental work in the present fifteen cases is certainly sufficient. The incubation period is most significant. Infectious hepatitis can also be transmitted by parenteral means, but the incubation period is shorter.

Establishing the previous dental work is of primary importance in arriving at a prompt probable diagnosis of serum hepatitis, or at least including it for consideration in the differential diagnosis. In the authors' experience, the usual inquiry about any injections or needles during the last 6 months will invariably fail to bring out any dental data. Apparently, a positive history is rarely obtainable unless specific questions are asked. Their plea is, therefore, that during the history taking, or better yet, during examination of the patient's oral cavity, he be asked about any visits to a dentist in the last 6 months, and that this be followed by specific questions as to injections or suturing during these visits.

The data presented would indicate that, in this hospital at least, 30% of apparent infectious hepatitis cases in adults actually may be cases of serum hepatitis. At the same time, it shows that out of twenty-two cases of serum hepatitis over a 2-year period, fifteen (68%) were due to exposure at a dentist's and seven (32%) to the actual administration of blood or plasma. It appeared, therefore, that in this community serum hepatitis following dental procedure is a considerable public health problem.

Chemical sterilization should be abandoned. Autoclaving is a choice method for killing the virus, but of course it must be used properly. Boiling for more than half an hour may be sufficient.

Cleaning of needles and syringes is important. Autoclaving of syringes and needles under conditions of proper moisture, temperature, and length of time, and using a different syringe and needle for each patient, may not be enough if the procaine itself has been contaminated.

Because it has been recognized that only 1.0×10^{-4} cc. of contaminated serum is sufficient to produce serum hepatitis, and because syringe contaminations in several ways have been well demonstrated, the step from syringe to procaine contamination is certainly plausible. If this has occurred, the procaine bottle with its contents can be autoclaved. The authors suggest that this be done routinely after each procedure in hospital practice where many different individuals have the opportunity to use one bottle. (Foley, F. E., Gutheim, R. N., Serum Hepatitis Following Dental Procedures - A Presentation of Fifteen Cases Including Three Fatalities: *Ann. Int. Med.*, 45: 369-378, September 1956)

* * * * *

Betatron Therapy in Vesical Carcinoma

Advanced or sessile infiltrative carcinoma of the urinary bladder presents such a gloomy prognosis from a standpoint of both curability and palliation that every available avenue of treatment must be fully explored. In every case in this review, treatment was instituted with the full realization that the ultimate outlook was very poor and the possibility of cure almost nil. No case was included in which the possibility of radical cure by either surgical or conservative means was deemed possible.

The betatron has two principal advantages over the ordinary 200 KV radio-therapy machine. First, there is less "scatter" and, therefore, the area receiving maximum therapy can be better localized. Second, deeper penetration can be accomplished with a minimum of skin reaction and, therefore, a considerably greater tumor dose can be delivered to intrapelvic organs.

From a survey of the literature, a few general conclusions can be reached: Betatron therapy is not successful in treating deeply infiltrating carcinoma of the bladder. Poor results are obtained where treatment follows recent cystotomy. Extensive low grade multiple papillomatosis is not improved. Superficially infiltrative grade 2 and 3 lesions do respond to betatron therapy, but the ultimate over all survival rates are no better than those for trans-urethral or open surgical management.

This series consists of 17 cases, all with proven carcinoma of the urinary bladder. Thirteen of these patients had transitional cell grade 3 or 4 lesions with muscle invasion, one had an advanced grade 2 lesion, two had epidermoid carcinoma, and one had adenocarcinoma. Known pelvic node metastases, observed and confirmed by biopsy during a urinary diversion procedure, were present in one. Four patients had urinary diversion into an ileal segment, two prior to treatment and two immediately after treatment.

Only four patients of this series are alive. One patient has a transverse colostomy and the urine has been diverted into an isolated ileal segment. After 14 months of treatment, he has gained weight and his general condition is satisfactory. As far as the authors have been able to determine cystoscopically and by bladder biopsy, he is free of carcinoma. A second, also surviving 14 months, has experienced an intestinal obstruction requiring surgical correction, but at present he is doing satisfactorily and there is no cystoscopic evidence of carcinoma in the bladder. He is completely asymptomatic as far as the urinary tract is concerned. Two are alive with definite evidence of persistent carcinoma. One of the two has had excellent palliation. There was a marked regression of his tumor cystoscopically, but recently after approximately one year, the tumor has begun to grow and the patient is now experiencing an occasional episode of gross hematuria. Thirteen have expired, the longest survival being 13 months, the average being about 3 months. Two patients in whom there was apparently complete cure of the bladder carcinoma died of multiple metastases, one at the end of 9 months and the other after 12 months.

Although this series is comparatively small, the authors believe that some definite conclusions can be drawn from it. They have confirmed the impression of others that the possibility of curing otherwise hopeless cancer of the bladder by betatron therapy is not feasible. With possibly two exceptions, it is evident that the life of any of these patients has not been prolonged. Furthermore, the considerable number of gastrointestinal complications and the definite systemic depression in some have actually been contributory factors in shortening their ultimate survival.

On the positive side there has been excellent palliation in seven cases as far as bladder symptoms are concerned. In five cases, the primary lesion has been destroyed, indicating that some of these tumors are radiosensitive and that the betatron is capable of delivering a sufficient dose to accomplish this destruction. The possibility of a favorable response in superficially invasive tumors must be kept in mind. Although it is too soon to evaluate, in at least one instance, the possibility of having eliminated the primary disease in an advanced case is a good one.

The authors are under the impression that radical surgery presents the best possibility of cure in patients with lesions localized to the urinary bladder if the patient is a suitable surgical risk. Betatron therapy should be utilized as a palliative instrument in inoperable cases, but the treatment should be directed at the bladder alone and no effort should be made to attack the areas of lymph node drainage. The betatron is of value in the management of grades 3 and 4 sessile vesical carcinoma which are not too advanced and in which surgery is contraindicated for constitutional reasons. The betatron should also be used as a curative instrument in patients who refuse radical surgery. (Cordonnier, J. J., Seaman, W. B., Betatron Therapy in Advanced Carcinoma of the Urinary Bladder: J. Urol., 76: 256-262, September 1956)

* * * * *

Spontaneous Regression of Cancer

Spontaneous regression of cancer is an intriguing and challenging phenomenon which has been mentioned as a probability or fact by numerous writers in the field of oncology, but proof of its existence is difficult to obtain. Few writers have ventured a statement relative to its frequency, but Bashford has estimated that it occurs once in 100,000 cases of cancer and Boyers, once in 80,000. Some authorities have expressed serious doubt that the phenomenon ever occurs.

However, in recent years, the publications of Dunphy, Stewart, and Morton and Morton, in particular, have suggested that on extremely rare occasions, neoplastic disease may not continue its inexorable progressive course, but may undergo temporary or permanent spontaneous regression. Since the last collective review of possible cases of spontaneous regression of cancer was made by Rohdenburg in 1918, a comprehensive study of the

incidence and nature of this phenomenon has been initiated by the authors with the support of the American Cancer Society.

The authors have defined spontaneous regression of cancer as the partial or complete disappearance of a malignant tumor in the absence of all treatment, or in the presence of therapy which is considered inadequate, to exert a significant influence on neoplastic disease. They do not imply that spontaneous regression need progress to complete disappearance of tumor, nor that spontaneous regression is synonymous with cure. In a few cases reported in this article, tumor which underwent apparently spontaneous regression in one area flourished unchecked in other areas of the body or reappeared at a later time.

Although more than 600 cases of tumor regression, published or obtained by personal communication, have been reviewed, to date only forty-seven cases have been considered by the authors to have adequate documentation (including histologic confirmation of the malignancy of the primary or metastatic tumor) to accept as probable examples of spontaneous regression.

Many factors might be suggested as being wholly or partly responsible for the spontaneous regression of cancer in these collected cases.

1. Endocrine influences. The therapeutic effectiveness of endocrine treatment in the management of advanced cancer of, for example, the breast and prostate, is well established. It is possible that hormonal alterations within the body, by menopausal effects or other endocrine factors as yet unknown, may have exerted a beneficial effect in the reported cases.

2. Complete surgical removal. Of the 47 collected cases, partial removal of the tumor area which subsequently underwent spontaneous regression was performed in a number of cases. It is possible that the remaining tissue was inflammatory only rather than malignant.

3. Unusual sensitivity to inadequate irradiation or other therapy. Irradiation therapy was utilized in five cases. However, in all instances, the dosage used was small and the response during the period of treatment was such as to suggest that irradiation was not the cause of the regression. However, because irradiation was used in these cases, therapeutic effect due to an unusual sensitivity of the tumor cannot be ruled out.

In one instance, small amounts of nitrogen mustard were used, and in another case, small doses of triethylene melamine. While these substances are generally completely ineffective in control of the tumors in which they were used, it is a remote possibility that for some unknown reason these tumors were unusually sensitive to these substances. Coley's toxins were also used in several cases.

4. Fever and/or acute infection. These factors have frequently been suggested as of importance in cases of spontaneous regression. The complete regression of adenocarcinoma of the colon reported by Fergeson and Black would appear to fit into this category.

5. Allergic reaction. Allergic reaction with destruction of the tumor cells might be a factor in some cases. The complete regression of a myosarcoma of the uterus reported by Stewart possibly might be included in this group.

6. Interference with nutrition of the tumor. It has been suggested by Rohdenburg that during incomplete removal of malignant tissue the blood supply of the remaining tumor may be so impaired that death of the residual tumor occurs. Likewise, it is conceivable that local or general disturbances of the body metabolism might adversely affect the growth or viability of cancer.

7. Removal of carcinogenic agent. The disappearance of eight carcinomas of the bladder (with complete regression confirmed by microscopic examination in four cases) after ureterosigmoidostomy suggests that regression may occur after withdrawal or divergence of a carcinogenic agent.

8. Incorrect diagnosis of malignancy. Because of the factor of error in the diagnosis of malignancy, all cases published before 1900 have arbitrarily been excluded from consideration at the suggestion of several pathologists. The accuracy of differentiation between benign and malignant tumor is acknowledged to be a source of error.

It is barely possible that if the authors had had more clinical data, a large number of cases studied, but not included, would meet their prerequisites. In eleven of the forty-seven collected cases, regression was complete and verified by microscopic examination of the tissues after regression. One of the main purposes of this study is to see if the authors could identify a significant factor or factors responsible for the regression. (Everson, T.C., Cole, W.H., Spontaneous Regression of Cancer - Preliminary Report: Ann. Surg., 144: 366-379, September 1956)

* * * * *

Inguinal Hernia in Infancy and Early Childhood

Inguinal hernia is the commonest congenital lesion for which infants and children have been admitted to the Children's Memorial Hospital in Omaha. Its incidence exceeds three to one the next commonest abdominal lesion which is congenital hypertrophic pyloric stenosis.

This article summarizes some of the pertinent clinical aspects of this common lesion and its management. The material consists of the critical review of a consecutive series of 298 inguinal hernias seen in 240 infants and small children.

Inguinal hernias occur in males and females in a ratio of approximately 10:1. In this series, there were 217 males (90.4%) and 23 females (9.6%). It is common for the hernia to be noted at birth or during the first few months

of life when straining or crying makes its presence evident. Some of the largest hernias have been seen in small infants and 3 in premature babies.

The ages at which the hernias were first noted in this consecutive group of 240 small patients are listed in a table. It is significant that 58.7% were evident by the end of the first year of life and within the first 3 years, 78.1% were admitted for treatment. Although this analysis covered the pediatric age group from birth through 12 years of age, in only 21.9% of the patients admitted did the hernia make its appearance after the third year.

In this series of 240 patients, 29 (12%) presented on initial examination with bilateral hernia. In 20 of the 29 cases, the hernias appeared simultaneously on the two sides, while in 9 instances the second hernia appeared before the child came to surgery or was unknown to the mother until the initial surgical examination.

In the course of this study, a total of 16 patients returned with a second hernia which made its appearance on the opposite side after primary repair of one side. In 12 of these 16 cases, the primary hernia was on the right side and in 4 on the left side. The interval between the initial unilateral repair and the appearance of a hernia on the opposite side was as follows: 1 year or less, seven cases; 1 to 2 years, one case; 2 to 4 years, five cases; over 4 years, three cases.

Because of this unhappy experience, the authors have recently recommended and practiced routine exploration of the opposite side in all unilateral hernias under the age of 3 years provided the general condition of the infant is satisfactory.

The diagnosis in itself is not usually difficult, although the small size of the inguinal canal does not lend itself to digital examination as in the adult. A definite diagnosis is substantiated when an abnormal swelling is noted in the inguinal region during crying or straining which readily disappears with digital pressure over the canal.

However, there are certain pitfalls in differential diagnosis of an inguinal mass. Transillumination as an aid in the differential diagnosis in infancy is hazardous and unreliable because an inguinal hernia containing bowel may readily be confused with a hydrocele. Compression of a communicating hydrocele with a large opening may yield an effect similar to the reduction of a hernia, and conversely, an incarcerated hernia in the infant on compression will not change in size as is also true of a hydrocele of the cord. The general appearance of the infant and the history obtained from the mother are of great value in these confusing problems, and the authors believe that one must explore a small number of these cases where the diagnosis is in doubt.

General agreement exists among those particularly interested in the surgery of infancy and childhood that all inguinal hernias should be repaired as soon as the diagnosis is established. Unfortunately, there are still many who advise parents that operation should be delayed until the child reaches the age of 3 or 4 years. Admittedly, operation may be a little easier with

the older child, but unfortunately the majority of these little patients developed their hernias during the first 2 or 3 years of life and its management becomes a real problem for the mother if surgery is delayed. There is practically no support for the idea that an established hernia in an infant will obliterate itself spontaneously. Conservative means, using trusses of any known type, have been extremely unsatisfactory in the experience of the authors, and it is very unusual to find a mother capable of maintaining constant reduction of a hernia by such means. Furthermore, these cases which do become complicated by incarceration, occur almost entirely in this age group and demand immediate repair. Because the small infant tolerates a well-given anesthesia very well and the repair is entirely feasible in capable hands, the authors see no reason for withholding surgical correction from all cases regardless of age. (McLaughlin, C. W. Jr., Kleager, C., The Management of Inguinal Hernia in Infancy and Early Childhood: J. Dis. Chil., 92: 266-270, September 1956)

* * * * *

First Year Residencies

Applications for first year residency appointments with training to commence in July 1957, will be considered by the Bureau Advisory Board starting in November 1956.

First year residencies will be available in all specialties. Regular officers and those Reserve officers who will accept Regular Navy commissions will be given priority in the selections for residency assignments.

Residency applications should be made by means of an official letter addressed to the Bureau of Medicine and Surgery, and forwarded via the chain of command. Applications should contain the service agreement required by BuMed Instruction 1520.7 of 4 August 1954, and may include two or three choices of assignment listed in order of preference, if desired.
(ProfDiv, BuMed)

* * * * *

Film Reference Guide for Medical and Allied Services (NavMed P-5042)

This guide is designed to provide a ready reference to selected medical films from civilian and military sources. Information listed relative to each film is as follows:

- | | |
|--|-------------------------------|
| 1. The title | 5. A description of the film |
| 2. Motion picture or film strip | and its informational content |
| 3. Name of producer or releasing agent | 6. Distributor from which it |
| 4. Release date | may be obtained |

An appropriate number of copies of this valuable publication will be sent to all Naval hospitals and Hospital Corps Schools in the near future.
(ProfDiv, BuMed)

* * * * *

Safety Precautions in Use of the
Picker Type X-Ray Machine

A report was received from a large naval hospital following an investigation of a case involving a fall of a patient from an x-ray table. The following information is considered pertinent to the case:

1. The patient fell from a Picker type x-ray table by sliding feet first while lying in a vertical position on the table.
2. The cause of the fall was the x-ray table footboard having come in contact with the floor, forcing the footboard upward until it became detached from its holding position while supporting the patient.
3. There were no safety marks or instructions on the x-ray machine indicating precaution in attaching the x-ray footboard at the second hook from the end of the x-ray table.
4. It was the opinion of the board that investigated the accident, that the primary cause of the accident was a basic defect in the design of the Picker table in that the lowest pair of pegs provided for attachment of the footboard permitted the footboard to become unlocked when the table was placed in a vertical position. Also, that a contributory cause of the accident was the lack of a precaution sign or safety design which would prevent attaching the footboard to the second hook on the x-ray table.

Because of the possibility of similar accidents occurring in activities using the Picker type x-ray table, it is suggested that the second connection rod at the foot end of the Picker x-ray machine table be made unusable. This can be accomplished by removing the rod or blocking the inside of the footboard at this point without interfering with the normal operation of the machine.
(ProfDiv, BuMed)

* * * * *

Please forward requests for Change of Address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

* * * * *

From the Note Book

1. Correction to Volume 28, Number 6, dated 21 September 1956:
Page 34, line 1, should read "acclimatization or training and—despite intensive study since—there is still" et cetera
Page 35, Table II, subtitle should read "Case Incidence Per 100-Man Months."
2. Rear Admiral F. R. Moore MC USN, Inspector General - Medical, accompanied the Inspector General - Navy, Vice Admiral R. H. Hillenkoetter, on an inspection tour of naval facilities in Europe and the Mediterranean area. (TIO, BuMed)
3. Rear Admiral F. P. Gilmore MC USN, reported to the Bureau of Medicine and Surgery on October 4, 1956, and assumed duties as Assistant Chief of the Bureau for Planning and Logistics. (TIO, BuMed)
4. At a ceremony conducted recently at Lima, Peru, LT Gertrude M. Oard NC USNR (Inactive) was awarded the Peruvian Navy Cross for Merit in the Degree of Officer-Distinguished as White, the only woman to have received this honor from the Peruvian Government. LT Oard is the wife of Captain H. C. Oard MC USN. (TIO, BuMed)
5. Captain T. J. Canty MC USN, Chief of the Amputee Service, and LCDR C. C. Asbelle MSC USNR, amputee rehabilitation specialist, and four amputees associated with the rehabilitation program at Oak Knoll, attended the Twenty-first Biannual Surgical Congress of the International College of Surgeons in Chicago. (TIO, BuMed)
6. Captain P. B. Phillips MC USN, head of the Neuropsychiatry Department, U.S. Naval School of Aviation Medicine, NAS, Pensacola, addressed the Personnel Management Association of New Orleans, La., October 10, on Psychological Factors in Employee Motivation. (SchAvMed)
7. Captain Wendell G. Scott MC USNR, Commanding Officer of the Naval Medical Reserve Company 9-1 in St. Louis, was elected President-Elect of the American Roentgen Ray Society on September 20, 1956. He was also reappointed Associate Editor of the American Journal of Roentgenology, Radium Therapy and Nuclear Medicine. Captain Scott is Professor of Clinical Radiology at Washington University School of Medicine in St. Louis. He is also Reserve Consultant in Radiology to the Bureau of Medicine and Surgery.
8. Subphrenic abscesses can and do occur in patients while they are receiving antibiotic drugs. The abscess, when camouflaged by antibiotics, may present an innocent clinical picture in the early stages. Escape from drug

influence may be so sudden and catastrophic that the patient, who has been progressing nicely, may become critically ill in a very short time. (Ann. Surg., September 1956; W.H. Gerwig Jr., M.D., B. Blades, M.D.)

9. General anesthesia for dental office procedures must be regarded today as almost a specialty within itself, differing from all other aspects of dental practice and in a variety of ways from the practice and general anesthesia in hospitals. It cannot be relegated to the hands of an untrained dental assistant whose function it is to manipulate the dials of an anesthetic machine under instruction from the dentist who at the same time is engaged in the performance of dental procedures. (J. Oral Surg., October 1956; H. M. Seldin, D.D.S.)

10. Except in a few specific circumstances, the use of antibiotics by the dentist appears to be contraindicated. The possible untoward effects brought about by antibiotics include acute anaphylactic toxic reactions related to their sensitizing ability, patient intolerance resulting in allergic reactions, the development of antibiotic resistant strains of ordinarily susceptible pathogenic strains of bacteria, and the emergence in large numbers of organisms normally antibiotic-resistant as antibiotic-labile organisms are suppressed. The routine use of antibiotics in dental practice in the absence of a clearly defined need cannot be too strongly condemned. (O.S.O.M. & O.P., September 1956; S. L. Lane, M.D., D.D.S.)

11. The clinical aspects of 78 cases of constrictive pericarditis have been studied. Forty-two patients operated upon are still living. Six have been followed for over 20 years, ten for over 10 years and eleven for over 5 years. All of the patients followed over 20 years are living normal unrestricted lives. (Ann. Int. Med., September 1956; J.C. Dalton, M.D., R.J. Pearson Jr., M.D., P.D. White, M.D.)

12. A preliminary report of a prospective closely correlated clinical cytopathologic group study of 136 cases of atypical lesions of the cervix is presented. The need for the formation of clinical-cytopathologic groups in individual hospitals for the study of cervical atypias and the interchange of material between sectional and intersectional groups is stressed. (Am. J., Obst. & Gynec., October 1956; M. J. Jordan, M.D., G.M. Bader, M.D., E. Day, M. D.)

13. A clinical and bacteriologic evaluation of novobiocin is reported in Arch. Int. Med., September 1956; J.Z. Pearson, M.D., et al.

14. The potential role of non-nutritive food additives and contaminants as environmental carcinogens is discussed in Arch. Path. September 1956; W. C. Hueper, M.D.

* * * * *

Recent Research ProjectsNaval Medical Field Research Laboratory, Camp Lejeune, N. C.

1. Evaluation of the Tourniquet-Incision and Suction Treatment of Snake Bite. Special Report. NM 005 052.08, August 1956.

Rabbits (84) were injected with *Crotalus adamanteus* venom (approx. 4 mg./kg body wt.) and treated in four different ways: immobilization; immobilization and tourniquet; immobilization, incision and suction; and simple return to cage. Results indicate rabbits live longest when immobilization with or without tourniquet is used; the use of incision and suction with immobilization shortens the time to death and is contraindicated. Rabbits injected and returned to cages immediately lived the shortest length of time and served as controls. It is concluded:

- a. Immobilization appears to be helpful in the treatment of snake bites.
- b. The tourniquet apparently does not increase survival time, nor does it decrease this period.
- c. Incision and suction not only fails to aid, but in fact decreases the survival period.

Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Rate Behavior and Concentration Profiles in Geometrically Constrained Enzyme Systems. NM 000 018.04.15, 25 June 1956.
2. A Pharmacological Study of Some Synthetic Anticholinesterases of the Substituted Ethylene Diamine Type. NM 000 018.12.06, 29 June 1956.
3. An Automized Technique of Investigating Differential Sensitivity to Auditory Intensities. I. The Influence of Step Size and Interval Between Stimuli. NM 000 019.02.02, 5 July 1956.
4. The Viability of Fresh and Frozen Corneas as Determined in Tissue Culture. NM 007 081.29.01, 6 July 1956.
5. The Feasibility of Pooling Responses of Normal Tissues from Different Studies. Memorandum Report 56-6. NM 006 012.04, 17 July 1956.
6. Some Effects of Hypothermia on the Normal and Abnormal Physiology of the Nervous System. NM 007 081.30.03, 20 July 1956.

Naval Medical Research Unit No. 3, Cairo, Egypt

1. The Incidence of Salmonella Infections in Two Egyptian Villages. NM 007 082.32.02.

Naval Air Development Center, Johnsville, Pa.

1. Relationships Between Oculogyral Illusions and Nystagmus. NM 001 111 302, Report No. 1, 24 August 1956.

Scientific Meeting on Aviation Pathology

The Second Scientific Meeting of the Joint Committee on Aviation Pathology will be held in the Dart Auditorium of the Armed Forces Institute of Pathology, Walter Reed Army Medical Center, Washington, D.C., 15-16 November 1956, following the 63rd Annual Convention of the Association of Military Surgeons. Papers covering a wide variety of subjects relating to the pathological and physiological aspects of aircraft accidents will be presented.

All flight surgeons, laboratory officers, and other interested physicians are invited to attend. Details of the program are available in the Division of Aviation Medicine, Bureau of Medicine and Surgery, Washington 25, D.C.
(AvMedDiv, BuMed)

* * * * *

BUMED NOTICE 5042

11 October 1956

From: Chief, Bureau of Medicine and Surgery
To: Activities Under Management Control of BuMed

Subj: On-Site Surveys of Functional Areas; information concerning

Encl: (1) INSGENNOTE 5042 of 1 Oct 1956

This notice disseminates information concerning the procedure which will be used in preparing and transmitting recommendations resulting from on-site surveys of functional areas.

* * * * *

BUMED NOTICE 1510

15 October 1956

From: Chief, Bureau of Medicine and Surgery
To: Continental U.S. Naval Hospitals

Subj: Hospital Corps Training in Operating Room Technic (ORT)

This notice promulgates the list of naval hospitals authorized to give Hospital Corpsmen formal training in Operating Room Technic.

* * * * *

The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

DENTAL**SECTION**

Rear Admiral Malone Visits West Coast Facilities

Rear Admiral R. W. Malone, DC USN, Assistant Chief for Dentistry and Chief, Dental Division, Bureau of Medicine and Surgery, accompanied Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical), and members of the Civilian Health and Medical Advisory Council on a visit to medical and dental facilities on the west coast, 9-16 October 1956.

The Council met in San Francisco on 11 October with major medical commanders in the San Francisco area. On 12 October, the Council visited the San Diego Naval Hospital, and on 13 October visited Marine facilities at Camp Pendleton.

* * * * *

Training Aid Pamphlet

The training aid pamphlet, "An Approach to Great Efficiency with Diamond Instruments and Tungsten Carbide Burs," will be distributed to all ships and stations in the near future.

The third printing of this pamphlet is edited by LCDR H. M. Tanner, DC USNR. It is considered that this publication will serve as a valuable training aid to Dental officers, particularly since increasing use is being made of high speed operating instruments.

Activities desiring additional copies after initial distribution should submit request to the Commanding Officer, U.S. Naval Dental School, National Naval Medical Center, Bethesda, Md.

* * * * *

Dental Officers Attending Civilian Institutions

During the current fiscal year, ten Naval Dental officers are receiving full-time instruction at the following civilian dental institutions:

Basic Science

LCDR G. H. Green DC USN - Northwestern University, School of Dentistry

Endodontics

LT E. C. Penick DC USN - University of Alabama, School of Dentistry

Oral Surgery

CDR R. A. Middleton DC USN - Georgetown University Graduate School

LCDR H. S. Kramer DC USN - University of Pennsylvania Graduate School of Medicine

LT H. J. Dennis DC USN - Georgetown University Graduate School

Periodontics

Captain C. T. Pridgeon DC USN - University of Pennsylvania, Graduate School of Medicine

LCDR George (n) Ulrich DC USN - Ohio State University College of Dentistry

LT W. N. Johnson DC USN - Ohio State University, College of Dentistry

Prosthodontics

Captain W. A. Newman DC USN - Ohio State University College of Dentistry

LT V. P. Knapp DC USN - Tufts College Dental School

* * * * *

Wave Dental Technician Selected for
Nursing Educational Program

Geraldine Frances Adams, DT3 USN, recently on duty at the Naval Dental Clinic, Naval Gun Factory, Washington, D.C., was selected for enrollment in the basic nursing educational program at civilian universities, and entered Boston University School of Nursing on 9 September 1956 for a four-year period of instruction.

The nursing educational program was established and made available to Hospital Corps WAVES under a joint plan of the Bureau of Medicine and Surgery and the Bureau of Naval Personnel; it provides an opportunity for enlisted women to qualify for officer status in the Nurse Corps of the Navy and is an additional source for augmentation of the Nurse Corps.

* * * * *



MEDICAL RESERVE SECTION

Naval Reserve Hospital Corps Program

As contained in BuPers Instruction 3500.16, dated 12 September 1956, the Chief of Naval Personnel has authorized and established the Naval Reserve Hospital Corps Program in all Continental Naval Districts. Surface Divisions training hospital corpsmen have been redesignated as Hospital Corps Divisions in accordance with the below assignments. Billets for Hospital Corps Divisions are authorized as follows:

Officer

<u>Rank</u>	<u>Corps</u>	<u>Designator</u>	<u>Allowed</u>
CDR	MC	2105	1
LCDR	MC	2105	1
LT	MC	2105	2
CWO	MSC	8176	1
Total			<u>5</u>

Billets in any pay grade may be filled by members in lower pay grades, but not by members in higher pay grade. Medical Service and Nurse Corps officers may be assigned to any of the authorized Medical Corps billets, except as may be prohibited by Article X of NavPers 15085A of 1 April 1949.

Enlisted

<u>Rating</u>	<u>Pay Grade</u>	<u>Allowed</u>
HM	E-7	2
HM	E-6	12
HM	E-5	16
HM	E-4	20
Total		<u>50</u>

Normally, only personnel of HR, HA, HN, or HM ratings will be assigned to Hospital Corps Divisions. Exceptions to this authorized rating structure are contained in the above BuPers Instruction.

Hospital Corps Divisions

Unit designation (long): Naval Reserve Hospital Corps Division
Unit designation (short): NRHC Div.

The divisions listed below are either established at the location indicated or are authorized for establishment in the Naval District to which assigned. The Chief of Naval Personnel will establish the unassigned divisions in specific locations upon receipt of recommendations from cognizant Naval District Commandants in accordance with BuPers Instruction 5400.1.

<u>Hospital Corps</u> <u>Division Number</u>	<u>Location</u>	<u>Former Surface</u> <u>Division Number</u>
1-1	Boston, Mass. (Chelsea NavHosp)	1-45(H)
1-2	(Unassigned)	
3-1	New York, N. Y. (St. Albans NavHosp)	3-107(H)
3-2	(Unassigned)	
4-1	Philadelphia, Pa (PhilNavHosp)	4-25(H)
4-2	(Unassigned)	
5-1	(Unassigned)	
5-2	(Unassigned)	
6-1	Charleston, S. C. (ChasNavHosp)	6-90(H)
6-2	(Unassigned)	
8-1	(Unassigned)	
8-2	(Unassigned)	
9-1	Chicago, Ill.	9-240(H)
9-2	(Unassigned)	
11-1	(Unassigned)	
11-2	(Unassigned)	
12-1	San Francisco, Calif. (SFNavShipYd)	12-54(H)
12-2	(Unassigned)	
13-1	(Unassigned)	
13-2	(Unassigned)	

Reserve Medical Department personnel interested in activating a Hospital Corps Division should contact the Medical Reserve Program officer of their Naval District.

* * * * *

National Officer - Naval Reserve Association

Captain John H. Rogers MC USNR, 490 Peachtree Street N. E., Atlanta, Ga., was elected SURGEON of the Naval Reserve Association which convened

its Third National Conference at Cleveland, Ohio, September 8-9, 1956. In addition to being a National Officer, Captain Rogers is also a member of the National Executive Committee of the Association.

Captain Rogers served on active duty from April 1942 to November 1945, during which time he was awarded the following campaign medals: American Area, Pacific Area with seven engagement stars, and the Bronze Star Medal (combat). He has been a member of Reserve Medical Company 6-10 at Atlanta since January 1949; appointed Commanding Officer of this unit in June 1952, he received a commendation by the Chief of Naval Personnel on 11 January 1955 for Medical Company 6-10 having been evaluated Outstanding in the Sixth Naval District during fiscal year 1954.

* * * * *

The Naval Reservist's Creed *

(Considered to be worthy of reprint for the indulgence of all members of the Naval Reserve everywhere).

I serve voluntarily in the service of my choice - the United States Navy.

I serve willingly because it is my privilege as well as my duty to serve my country.

I serve with pride because of the heritage passed down to me by our nation's long line of proud naval volunteers.

I serve with dignity because I know that to my associates among the civilian population I am the Navy.

I serve with honor because the Navy's honor is mine to cherish and guard.

I serve with confidence because I am certain of the ability of my naval leaders and the future of the Navy.

I serve with fellowship because I am secure in the embrace of the unique and splendid comradeship of the Navy.

I ask only that I be given by my country and my fellow citizens the opportunity to better prepare myself to serve in the defense of this, our beloved Nation.

Amen

* Originated and adopted by the Naval Reserve Association Third National Conference, Cleveland, September 1956.

* * * * *

SUBMARINE MEDICINE SECTION



Dark Adaptation for Divers

The difficulty in dark adapting divers stems from the time required to achieve dark adaptation. For deck watch officers, this is overcome by having them put on goggles as soon as they are awakened for their night watch. Then by the time they reach the bridge they will be dark adapted. In the case of divers, the circumstances are such that, although they could wear goggles while being dressed, they are unable to remove the goggles after the helmet is put in place. Various methods of blacking out the ports in the helmets have been used. A hinged plate containing a filter for use when welding or cutting has long been a part of the diver's helmet. Insertion of filters over the ports to create the **illusion** of great depth or to simulate "blind" working conditions for the **diver** while observers outside the training tank can watch him for safety have **been used** for some time. Insert filters were used rather than paint or other types of removable coatings because of the difficulty the diver has in removing these materials.

The idea of external covers or filters on the helmet is of limited usefulness because the helmet is put on last and only just before the diver enters the water. He is on the bottom before sufficient time has elapsed for dark adaptation to take place. No one would ask a diver to wear his helmet for 20-30 minutes while waiting to dark adapt because of the weight of the helmet and the discomfort involved.

Probably the most important reason that dark adaptation for divers has never been pursued is its limited application. It is of no importance unless the water is clear. Then it is of importance only at considerable depths or during dawn and dusk periods of low level illumination. By force of circumstance, divers become accustomed to working "blind" hence do not regard poor visibility as other than incidental and unavoidable condition of their work. It is an interesting problem, but not one of pressing importance.

The note in the Medical News Letter brought three suggestions which proves that people read even the obscure notes therein. LCDR F. W. Brown III, MSC USN, made out a patent disclosure form which was forwarded by Captain R. H. Lee MSC USN from Panama City. He suggested a filter type

bag to enclose the entire helmet, hinged covers for the ports, removable inserts, or water soluble filter material to be smeared on the ports.

Captain H. G. Wagner MC USN of USS Valley Forge suggested having the diver close one eye, making the lid less translucent by use of grease paint. He agrees that it might take quite a bit of practice to hold one eye closed for 15 to 30 minutes. However, until the face plate is closed, the diver could wear an eye patch. This is based on the fact that each eye dark adapts independently.

CDR F. H. Holmes MC USN of U. S. Naval Hospital, Great Lakes, called attention to an article in Radiology: "After standard adaptation, black discs with central holes could be placed over the diver's eyepieces with a water soluble material and could be wiped off after the desired depth is reached."

These suggestions are all stimulating. It is not planned to set up a research project on this subject because of its limited application. A copy of these notes will be passed along to the diving doctors and interested diving activities. (Captain H. J. Alvis MC USN, Director, Submarine Medicine Division)

* * * * *

Quotable Excerpts from Report of Salvage of RC-21
by USS TRINGA from 230 Feet

"In salvage operations, patience is more than a virtue, it is a necessity."

Effects of depth on reasoning - "Helium-oxygen is a great improvement over air in this respect, but does not nullify the effect completely."

"Little, if anything but wasted gas, resulted from attempting to dive in over one knot of current. (Depth 230 feet)"

"Electrically heated underwear was used in all but eight of the helium dives. Use of the underwear was at the discretion of the individual divers. The divers who did not use it preferred the greater freedom of movement to comfort. The hand element was cut out of three suits. This greatly increased the freedom of movement of the diver's hands; with this alteration, all divers heartily endorsed the underwear."

* * * * *

NOTE: Dishwashing aboard submarines will be easier and probably better if the provisions of Chapter 1 (April 1956), Manual of Naval Preventive Medicine are followed. Article 1-13 gives the methods and Article 1-15 lists the synthetic detergent cleaners most suitable for submarine use with the correct stock numbers for use in ordering.



PREVENTIVE MEDICINE SECTION

Poliomyelitis Vaccine for Adults

BuMed Instruction 6230.8A of 13 September 1956, for all practical purposes, removes all age restrictions in the administration of poliomyelitis vaccine. It also reviews the circumstances under which members of the Medical Department should feel themselves obligated to strongly recommend the vaccine for adults.

Reference to this instruction is only to remind physicians that for maximum protection the full three doses are required with a minimum time interval of 8 months between the first and the last dose. Thus, a person given the first dose in November would be eligible for the third dose in July of the next year. Accordingly, the time to recommend poliomyelitis vaccine is now, not next summer when the usual pre-poliomyelitis season worry begins or when overseas rotation occurs.

One viewpoint that all Medical officers might well consider is that poliomyelitis vaccine is a form of free life insurance and accident prevention coverage. Although the chance of any particular adult contracting poliomyelitis is remote, the few unfortunates who get it each year will not take a very charitable attitude towards any member of the Medical Department who has failed to recommend the vaccine to them.

A good slogan for Medical officers might well be "I've had mine—have you had yours?"

* * * * *

Influenza During the Winter 1955 - 1956

The annual report of the Influenza Information Center of the World Health Organization located at the Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, is printed here as a matter of general interest. The report covers the period from July 1, 1955 to June 30, 1956.

Current available information on the occurrence of specifically diagnosed influenza and suspected outbreaks of influenza-like disease is

published each week in the Communicable Disease Summary of the National Office of Vital Statistics, Public Health Service, and is distributed to health agencies in the United States and other countries. This is part of a world-wide effort sponsored by the World Health Organization which attempts to improve the reporting of influenza and to encourage exchange of newly isolated strains of influenza virus for investigational purposes. In the United States, research laboratories, hospitals, and Federal and State agencies, including Army, Navy, and Air Force installations, report observations to the Influenza Information Center of the WHO Influenza Study Program in the United States. This summary will include the experience with influenza for the period July 1, 1955 to June 30 1956.

Of more than usual interest was an outbreak of specifically diagnosed influenza A, during July 1955, in a penal institution at Hagerstown, Maryland. The first cases were noted July 18 and continued for 3 weeks. Among 900 inmates, a total of 350 cases of respiratory illness occurred, and from a number of the 350 inmates affected, influenza A virus was recovered. No further outbreaks were recognized in the United States until the winter months.

In England during December, influenza A infection was diagnosed among American school children at an Air Force Base and also in scattered southern parts of that country as outbreaks of relatively mild intensity. The first laboratory recognized case in the winter months in the United States occurred in the third week of December in California, and this area of the country continued to report the largest number of cases.

In January, two sporadic cases of influenza A were diagnosed by virus isolation in the vicinity of Washington, D.C., but the incidence never attained unusual proportions.

During February, localized outbreaks of varying intensity were recognized in upstate New York; Pennsylvania; Cleveland, Ohio; and Illinois. Influenza A virus was recovered from individuals affected in some of these outbreaks. In Herkimer and Fulton Counties, New York, the incidence was high enough to be reflected in a school absentee rate of 40%, but this rate did not obtain in other areas. California reported a number of cases serologically confirmed from the north central part of the State and the San Francisco area.

In March, California continued to recognize specifically diagnosed influenza A from the San Francisco area and also from the southern part of the State. However, it was not of the same order as that which occurred in 1953 or 1951 and clinically was not severe. Minnesota experienced a low incidence, most noticeable as a respiratory disease outbreak, on a hospital ward. Influenza A virus was recovered in several instances. A localized outbreak of rather sharp intensity was also recognized in Hamilton, Montana, during this period. New York and other areas of Eastern United States continued to report sporadic cases or small outbreaks. California continued to experience a few cases in the month of April.

Of interest was the occurrence in Jamaica, British West Indies, of influenza A during December and January. Although the disease was described as moderately severe clinically, no unusual death rate was noted.

The mortality in the United States from all causes and from influenza and pneumonia did not reflect the occurrence of influenza A infection or show any excess over that expected for the winter months.

The strains of influenza A recovered from patients were antigenically similar to each other and to those recovered in the last several years in this country, including the A/FLW/1/52, A/Malaya/302/54, and A/Albany/2/55 strains.

In contrast to the preceding year, no isolation of influenza B virus was reported to the Influenza Information Center, although there were a few reports of serologically diagnosed infection with this type. Influenza C infection was recognized and reported only once.

The table shows that a total of 32 strains of influenza A virus and one strain of influenza C virus were reported as recovered in the United States during this time. By serologic means, 253 specific diagnoses of influenza A and 8 of influenza B were made. The distribution by months in this tale has little significance because of the widespread sources and the small number of reports.

Table 1.--Isolation of influenza virus and positive diagnostic serological tests (any technique) reported by civilian and military laboratories participating in the United States and Alaska.

Month and Year	Isolation of Virus			Routine Serologic Tests		
	Type			Type		
	A	B	C	A	B	C
1955 December	0	0	0	2	1	0
1956 January	6	0	0	30	3	0
February	14	0	0	70	2	0
March	11	0	1	137	2	0
April	1	0	0	14	0	0
Total	32	0	1	253	8	0

In summary, influenza A occurred in the United States last winter sporadically and in small localized outbreaks, though there were occasional outbreaks of sharp intensity in the East, the Midwest, and the West during the late months of 1956. Clinically, the disease was mild and there was no unusual mortality associated with it. Influenza B and C were reported less frequently than in the previous 2 years. (Davis, Dorland J., M. D., Executive Secretary, World Health Organization Influenza Study Program in the United States)

* * * * *

Guiding Principles of Medical Examinations in Industry

The purpose of a health service in industry (Shipyards, Air Stations, Ordnance Depots, Supply Centers, et cetera) is to provide a program of Positive health maintenance for personnel so employed. An important element of such a program is the supervision of the health status of the individual through examination, counseling, and assistance in proper job placement. Medical examination of personnel is designed to permit assignment of work compatible with the physical and mental fitness of individuals, and to help them maintain their health.

Proper placement of personnel, with due regard for the variation in physical demands required by different jobs and the safety and health limitations involved in disabilities, can result in improved job performance, less absenteeism, decreased likelihood of injury, less hazard to the health and safety of others, lessened chance of aggravation of disorders and, doubtless, a longer productive life span. Examination for and assistance in job placement are, therefore, practical individualized applications of the principles of preventive medicine.

The objectives of industrial medical examinations are:

1. To measure the medical fitness of individuals to perform their duties without hazard to themselves or others.
2. To assist individuals in the maintenance or improvement of their health.
3. To detect the effects of harmful working conditions and advise corrective measures.
4. To establish a record of the condition of the individual at the time of each examination.

Medical examination programs, if properly conducted, provide maximum benefits to personnel on the job, to management, and to the community. The emphasis should be on the placement of individuals according to their abilities

and not merely on the selection of the physically perfect and the rejection of all others. (Principles of Medical Service in Industry - Industrial Health Examinations (Revised 1956): AMA Council on Industrial Health)

* * * * *

Antibiotics in the Treatment of Virus Diseases

Offered as a rebuttal to those proponents of the "antibiotics-will-do-no-harm" school of medication, a paper presented at the Third Annual Symposium on Antibiotics in November 1955 suggests that antibiotics may actually delay recovery from certain virus diseases.

In summary, four factors contribute to the problem and are discussed in the paper:

1. Accurate diagnosis is difficult and antibiotics are used on the chance that a particular illness may be of bacterial rather than of viral origin.
2. Confusion arises from the classification of Chlamydozoaceae (psittacosis-lymphogranuloma group) with the true viruses.
3. A widespread belief prevails that antibiotics will at least be useful in preventing secondary bacterial infection.
4. There is an unjustified assumption that "at least antibiotics can do no harm."

A series of investigations and clinical impressions is reported which at least suggest that patients with influenza, the common cold, herpangina, poliomyelitis, measles, and mumps may recover more slowly when treated with antibiotics than they do if they receive simple supportive therapy only. The evidence on hand also suggests what the percentage of patients who develop bacterial complications is not materially affected by the use of antibiotics prophylactically, except for cases of smallpox, chickenpox, and herpes zoster.

Much confusion prevails because of the fact that Chlamydozoaceae have been classified in the past with the true viruses. This group of organisms, including the etiologic agents of psittacosis, lymphogranuloma, feline pneumonitis, trachoma, and inclusion blennorrhoea, were originally considered as typical viruses. Later, they were distinguished as the large viruses, or virus-like organisms. The most recent edition of Bergey's Manual of Determinative Bacteriology classifies them as a new family under the order Rickettsiales. However, few practicing physicians have been made sufficiently aware of this change to affect their thinking, let alone their practice. It may seem at first glance to be a purely academic and unimportant point. Actually, it is of considerable significance. Rickettsial diseases respond

to therapy with the broad-spectrum antibiotics. So do the Chlamydozoaceae. True viruses do not. Yet, because psittacosis responds to the tetracyclines and is considered to be a virus pneumonia, it is often argued by analogy that pneumonia due to chickenpox, measles, or influenza viruses will likewise respond.

In reference to the fourth factor listed, the author points out that, although the direct toxic effects of antibiotics are rarely reported, there is an increasing frequency of reported "reactions."

This is a faint cry of caution, and the author recommends further investigation and evaluation of the possible effects of antibiotics on virus infections. The complete paper is recommended reading to all practicing physicians. (Moulton, B., Food and Drug Administration, Department of HEW, Antibiotics in the Treatment of Virus Diseases: Antibiotics Annual, 1955-1956:719-725)

* * * * *

The Present State of Knowledge Concerning the Membrane Filter in Water Bacteriology

Although cellulose derivative filters have been used to separate bacteria and other small particles from liquids for almost a century, it has been only since World War II that they have become prominent in water bacteriology. Goetz, in 1947, made known the newer methods of using cellulose ester filters which he observed in Germany. This information was not generally available until 1951 when Clark et al., and Goetz and Tsuneishi published the results of their preliminary work on the application of these filters to the enumeration of coliform bacteria. In the following years, numerous other papers have described experiences with the membrane filter technique. It is the purpose of this brief discussion to summarize the information currently available on the membrane filter in water bacteriology and also to point out advantages and disadvantages in its use.

The basic principles and procedures of using the membrane filter are relatively simple and need not be repeated here. The new tenth edition of Standard Methods for the Examination of Water, Sewage, and Industrial Wastes includes as a tentative procedure a method for the enumeration of coliform bacteria with the membrane filter technique. This, it is hoped, will stimulate even more work with the filters.

One of the most important papers on the subject published during the past year dealt with a comparison of results obtained from the simultaneous examination of water samples by the membrane filter and most probable procedures number (M. P. N.). Working in conjunction with the Department of HEW, Public Health Service, a number of State and city health department laboratories, including the Sanitation Laboratory of the California State Department of Public Health, analyzed a total of 1706 water samples by each method. The results were compared on the basis of the 95% confidence limits of the confirmed

M. P. N. and it was found that 73.8% of the results were in agreement. There was no correlation, however, between recorded chemical or physical properties of the water and agreement or disagreement of results. Furthermore, it was concluded that the "test procedures do not measure precisely the same group of organisms and that the sanitary significance of the differences in the results of the procedures is yet to be determined."

This conclusion implies that there is danger involved in using the membrane filter technique in the routine assessment of water quality in lieu of the standard M. P. N. method because of the difficulty in interpreting results. Until such time as a sufficiently large body of information becomes available, the routine use of the membrane filter appears undesirable. This is not to say that there are no conditions under which the membrane filter can be of value other than for research. For the membrane filter can be used to advantage when time or materials are limited. Whereas a confirmed M. P. N. test requires 48 to 96 hours, results can be obtained by means of the membrane filter within 24 hours or even a shorter time. Thus, it is possible to make emergency administrative decisions on water quality, based on laboratory results, within one day. And, if conventional laboratory facilities are not available, field kits for using the membrane filter can be prepared: Ointment tins or plastic petri dishes can be used in place of glass petri dishes and an incubator vest employed.

To simplify the procedures still further, a unit is commercially available which contains all the equipment necessary for using the membrane filter. It is claimed that this unit can be used independently of a standard laboratory, does not require any utilities, and is ideally suited for field work. Included in this unit, and also separately available, are presterilized filters and prepared nutrient pads which only require the addition of sterile water before use. These "nutrient schedules," described by Goetz et al., eliminate all need for preparing media or sterilizing filters, pads, or media and, as such, decrease the time involved in making laboratory tests. However, the value of these nutrient schedules has not yet been determined independently. It would appear that these packs may be well suited to the small laboratory making infrequent use of the membrane filter. For laboratories doing more membrane filter work, the relatively high cost of such packs, as compared with the cost of the individual components which in themselves are still quite expensive, might preclude the use of prepared packs.

It should be noted that none of the above applications of the membrane filter are recommended for ordinary situations.

In the ordinary-base-laboratory use of the membrane filter, certain aspects of procedure have appeared to be unnecessarily involved. Slanetz and Bartley have very recently published the results of their attempts to simplify procedure. They recommended that the preliminary incubation on an enrichment medium is not only unnecessary, but that it may even be undesirable. Hajna and Damon also recommended a one-step incubation using a medium of their own development.

After comparing a variety of selective media for coliforms, such as the commercially available dehydrated M-Endo broth, EHC modified Endo broth, and others, Slanetz and Bartley concluded that the commercial dehydrated material is most satisfactory from the point of view of coliform yields. Another simplification which they proposed would eliminate the need for an atmosphere saturated with water. They found that normal hot air incubation did not decrease coliform counts.

If these results of Slanetz and Bartley are confirmed, it will be possible to use dehydrated media in preparing the substrate for coliform organisms, only a single unbroken incubation will be required, and no special incubation conditions will be necessary. These modifications would lead to marked savings in working time necessary for making membrane filter tests.

With certain waters, particularly those with relatively high turbidities and low coliform counts, difficulty is encountered in making a quantitative estimation of the coliform bacteria. The deposition of large quantities of suspended material frequently causes confluent bacterial growth on the filter and may make it impossible to do a colony count. Using the standard size membrane filters which are about 50 mm. in diameter, the volume of water which can be filtered is small. It is possible, however, to use larger filters, thereby spreading the solid material over a larger area and reducing the interference. Goetz et al., described a unit adapted for use with filters that are 9 cm. in diameter.

The membrane filter technique is not limited to use in the recovery of coliform organisms. It may be used to make total bacteria counts and counts of specific organisms, such as *Salmonella typhosa* and fecal streptococci, or to aid in the differentiation of members of the coliform group. It probably could be adapted for study of any organism or group of organisms occurring in water. These procedures for noncoliform organisms may be extremely valuable because of the low density of such bacteria in water and the fact that large water samples may be used when the membrane filter is used.

Advantages of the Membrane Filter Technique

The advantages of the membrane filter technique are numerous and have been pointed out by most of the investigators who have worked with it. They may be summarized as follows:

1. Relatively large samples may be used.
2. A short time is required for completing an analysis.
3. It gives a direct count which is reasonably accurate, rather than an M. P. N. in which large statistical fluctuations occur.
4. It reduces laboratory space required.
5. It makes possible the direct separation of organisms from the nutrient substrate. This is of particular value when differential counts are being made, or when it is desired to obtain pure cultures of various organisms.

6. It makes possible the recovery of organisms, such as enteric pathogens which are present in low concentrations and for which other methods are inadequate.

7. When dried, the membrane filter can serve as a permanent record.

8. It is particularly well suited to certain field uses and may be used under emergency conditions in the complete absence of a base laboratory.

Disadvantages of the Membrane Filter Technique

There are a number of disadvantages in using the membrane filter technique, some of which are of great practical significance. These are:

1. Samples of high turbidity and low coliform count are not well suited for the conventional membrane filter use.

2. Samples of high noncoliform and low coliform densities are likewise not well suited.

3. Coliform counts are not necessarily directly related to coliform counts by the M.P.N. procedure and are, therefore, difficult to interpret since allowable concentrations are set in terms of the present standard procedure.

4. To filter even a small volume of samples with high turbidity may require a long time. This effectively reduces the number of samples which may be set up in any given time.

5. The total time involved in preparations and manipulations is greater than that necessary in making an M.P.N. determination.

6. The media should be made up fresh each day and can not be stored.

7. The cost of membrane filters is high, from 16 to 18 cents each, and when a number of dilutions per sample are used the total cost of making the test probably will be greater than that of the M.P.N. procedure by a factor of at least two.

8. More equipment is required than for the M.P.N. procedure.

9. The acceptability of certain proposed procedures, such as vest or thermos bottle incubation, has not been fully established.

In emergency situations when it is impossible to use the M.P.N. method, the membrane filter procedure may be used to give approximate results. Because of the special uses to which the membrane filter can be put, laboratory personnel are encouraged to become familiar with the procedure. (Greenberg, A.E., S.M.; Yee, L., B.S.; Hartmann, F.W., ScD., The Present State of Knowledge Concerning the Membrane Filter in Water Bacteriology: The Public Health Laboratory, 14: 73-77, May 1956)

* * * * *

Fatigue

Physiological causes of fatigue are muscular exertion, diet, temperature, age, and work situations, including unsuitability for a particular job, cramped working space, discomfort, improper posture, inadequate lighting, noxious and nuisance vapors, and prolonged mental concentration. Fatigue may also have pathological causes and may be an indication of any one of a number of diseases. Psychological causes are listed as boredom, improper job placement, conflicts, insecurity, interpersonal relations, and poor planning of time for activities. Fatigue causes lowered efficiency and morale, failure to get along with others, and accident proneness. To the industry, these factors result in decreased quantity and quality of production and increased accident costs.

Some suggestions to the individual for the reduction or elimination of fatigue follow: avoidance of work that is beyond one's physical capacity; maintenance of a balanced diet; rest and relaxation, including utilization of rest periods; the planning of leisure time for relaxation and sleep, and the pursuit of a hobby; sufficient, but not too much, exercise; proper posture; the elimination of worries; abstinence from using "energy pills"; and consultation with a physician when the cause of fatigue is obscure. Management can do much to eliminate fatigue producing situations by avoiding some of the causes discussed. (Anonymous, Occupational Health Bulletin (Canada), 11: 1-3; April 1956; Abstracted in Industrial Hygiene Digest, Vol. 20, No. 8, p.8, August 1956)

* * * * *

NAVY DEPARTMENT
POSTAGE AND FEES PAID

DEPARTMENT OF THE NAVY
U. S. NAVAL MEDICAL SCHOOL
NATIONAL NAVAL MEDICAL CENTER
BETHESDA 14, MARYLAND
OFFICIAL BUSINESS
Permit No. 1048